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Bahirji Samrak Vidyalaya Education Society, Wapti's

BAHIRJI SMARAK MAHAVIDYALAYA

Basmathnagar Tq. Basmathnagar Dist. Hingoli – 431 512

Affiliated to : Swami Ramanand Teerth Marathwada University, Nanded

Centre No : Senior – 209

Recognized by UGC 2(f) and 12(B) Status

NAAC Reaccredited with 'B+' Grade
Best College Award of 2020 by Parent
University | Academic Administrative
Audit Report – 'A' Grade
An ISO: 9001: 2020

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🌐 www.bahirjicollege.org

INTERNAL QUALITY ASSURANCE CELL

Criterion VII – Institutional Values and Best Practices

7.1.3: Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following: (1) Green audit / Environment audit, (2) Energy audit, (3) Clean and green campus initiatives, (4) Beyond the campus environmental promotion activities

GREEN AUDIT/ ENVIRONMENTAL AUDIT REPORT FROM RECOGNIZED BODIES

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Green Audit Certificate

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2020-2021 and 2021-2022 (Analysed for 2 years)** to the Esteemed Institution

Bahirji Smarak Vidyalaya Education Society's

Bahirji Smarak Mahavidyalaya

Mudi Road, Basmathnagar, A/P – Basmathnagar, Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512

As part of the Institution's initiatives for a Healthy & Sustainable College the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Efficient Management of Premise.

Issued on **Friday, 23 September 2022** valid till **September 2023**


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Project Head and Green Building Professional-Consultant

Sustainable Academe

Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environment

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Website: <https://thegreenviosolutions.co.in/>

GREEN AUDIT

STUDY PERIOD (TWO YEARS) 2020 – 2021 AND 2021 - 2022

Sustainability study

AUDIT REPORT

Studied for

Bahirji Smarak Vidyalaya Education Society's

Bahirji Smarak Mahavidyalaya

Mudi Road, Basmathnagar, A/P – Basmathnagar,
Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512

Studied in the capacity of

An accredited & Certified Green Building Professional



Studied by

Greenenvio
Solutions

Valid till **September 2023**

Disclaimer

The Audit Team has prepared this report for the **Bahirji Smarak Vidyalaya Education Society's Bahirji Smarak Mahavidyalaya** located at Mudi Road, Basmathnagar, A/P – Basmathnagar, Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512 based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is an Accredited and Certified Green Building Professional-Architect; ISO Certified I.A. (IMS). Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Bahirji Smarak Vidyalyaya Education Society's Bahirji Smarak Mahavidyalaya, Basmathnagar** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Hon. Shri. Jayprakash Raosaheb Dandegaonkar**, (Ex-State Minister) President; **Hon. Adv. Shri. Munjajirao Narayanrao Jadhav**, Vice-President; **Hon. Shri. Panditrao Ramrao Deshmukh**, Secretary; **Shri. Umakantrao Anantrao Shinde**, Treasurer and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. P. G. Gawali**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. N. N. Lokhande**, Vice-Principal; **Dr. A. S. Kulkarni**, IQAC Coordinator; **Mr. S. K. Nayak**, IQAC Member Secretary; **Dr. V. T. Narwade**, Associate Professor in Botany; **Dr. P. W. Patil**, Associate Professor in Political Science; **Shri. N. K. Akmar**, Sports Director; **Dr. U. U. Raut**, Assistant Professor in History; **Shri. R. R. Barkar**, Assistant Professor in Computer Science and **Shri. M. S. Pawar**, Laboratory Attendant.

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Management

The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

1.2 Mission Statement of the Institution

The College adheres and focuses to the following mission:

- To provide education in the Mofussil area with quality consciousness.
- To generate social responsibility among rural students to become a good human being.
- To promote quality higher education among the rural students.
- To facilitate Social, cultural, educational, ethical and physical development of students.
- To create Social awareness and the spirit of scientific enquiry among the student community.
- To facilitate the spirit of moral & ethical behaviour among the learners.

1.3 About the Institution's Academic arena

The Institution offers the Bachelors and Masters Courses. The College works towards training young men and women to be competent, committed and compassionate, and lead in all walks of life.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Basmathnagar, Hingoli district of Maharashtra** with immense peace and calmness in the surroundings. There

is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture.

1.5 Assessment of the College

1.5.1 Affiliations

The College has all its courses approved and affiliated to **S.R.T.M. University**, established in 1994 as a state public university located at Latur Road Nanded in Maharashtra state.

1.5.2 Certification

- ➔ **AISHE** – The College has the AISHE Code C- C-7620.
- ➔ **ISO** – Certificate issue date 26 September 2020 and valid up to 25 September 2023.
- ➔ **NIRF** – The College has been regularly participating in NIRF Rankings since 2016.

1.5.3 Recognition

The College is recognised by **University Grant Commission (UGC)** under section 2 (f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi.

1.5.4 Accreditation

Cycle	First	Second
CGPA	-	2.64
Grade	C++	B+
Year	2005	2016

Table 1: NAAC Accreditation details of the Institute

The College is due to enter its Third cycle of NAAC.

1.6 Awards of the College

The College has received the '**Best College Award**' By Swami Ramanand Teerth Marathwada University, Nanded (Parent University) for academic year 2020-2021.

2. Institution overview

2.1 Populace analysis for Academic year 2021-2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **840 Boys and 845 Girl students**, thus there were **a total of 1,695 students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	08	00	08
Teaching staff	29	06	35
Non-Teaching staff	22	01	23
Total Staff Members	59	07	66

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the premises had a total of **66** Staff Members.

2.2 Populace analysis for Academic year 2020-2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **729 Boys and 826 Girl students**, thus there were **a total of 1,555 students** on the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	11	00	11
Teaching staff	30	06	36
Non-Teaching staff	22	01	23
Total Staff Members	63	07	70

Table 3: Staff data of the Institution for 2020-2021

The staff data shows the premises had a total of **70** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 17 Acres** and the **total Built-up area of College is 11,011.52 sq, or 1,18,483.95 sq. ft.** for a **total of 1,761 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1971. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institution is open from Monday to Saturday from 08:00 hours to 18:00 hours.

3. Green Building Study Audit

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 17 January 2022 – Discussion with the College
- 14 February 2022 – Allotment and Initiation by the College
- 14 February 2022 – Induction meeting
- 24 February 2022 – Survey of the Student and staff submitted
- September 2022 – Data submitted by the College
- 23 September 2022 – Submission of the report

Green practices

Background reference image Free photos on pixabay

4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

4.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings in the premises.

- **Determination of plastic zones** – *The College takes essential steps to avoid the usage of plastic in the premises.*
- **Social awareness** - *The College has taken up awareness drives on various social issues for rural upliftment and regeneration in the college and surrounding villages.*
- **Cleanliness Campaign** - *The Swachha Bharat Abhiyan is carried out on college premises as well as off-premises.*
- **Fresh environment** – *The College provides an eco-friendly ambience with fresh air and soothing environment which helps to maintain a physical and mental balance. This kind of a space it a must for an educational specially technical institute which is inviting and gives the stakeholders an opportunity to explore indoor and outdoor learning to a great extent.*
- **Waste management** - *One pit of size 8 X 10 feet is present in the premises which is useful to make compost which is further utilised for gardening purposes.*

4.2 Community Development

The various community development programs conducted include Tree Plantation, Life Learning, Employability Skill program introduced for the youth, Blood Donation Camp, Food Kit Distribution Program to the neighbourhood community, Relief fund programs. **A lot of efforts are involved right from planning to execution. The main motive behind these is social welfare. This kind of a tough process is highly admirable. We respect and congratulate the Institute for the same.**

4.3 Survey Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in College, following is the result received.

4.3.1 Participation

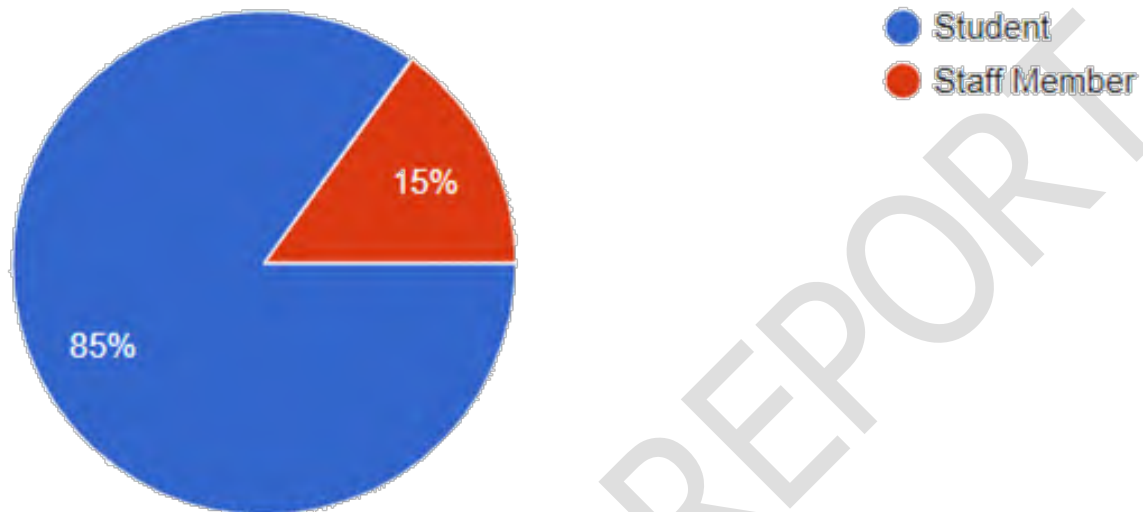


Figure 1: Participation analysis in the survey

A total of **293 responses** were received out of which 85% were students.

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

4.3.2 Rate the Green awareness practices in College

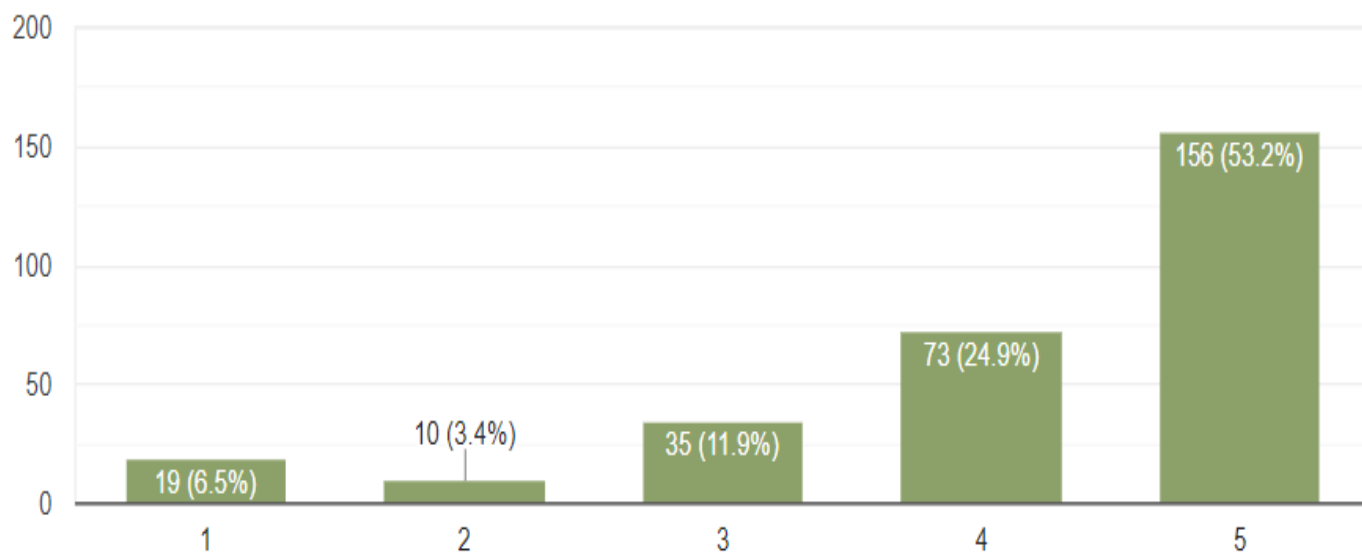


Figure 2: Green awareness practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 53%** followed by **25% for rating 4 (Very good)**.

4.3.3 Does your College conduct environment awareness programs/ webinars/ plantations/ cleanliness or similar programs?

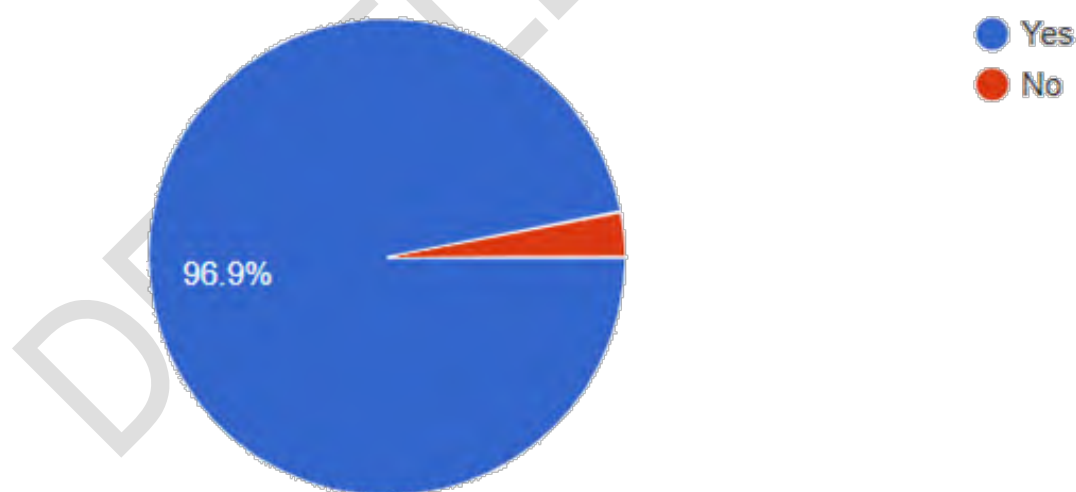


Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **97%** of responses confirmed activities are conducted which is very excellent.

4.3.4 Do you participate in such events?

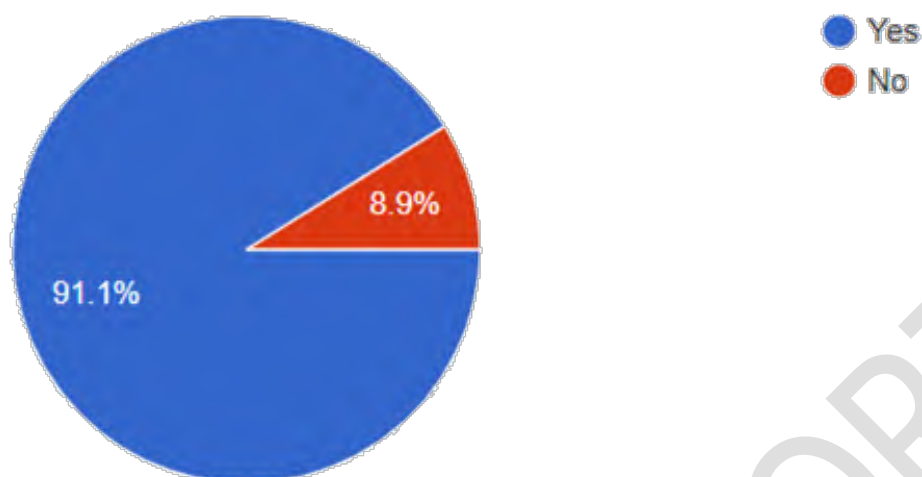


Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 91%** of the responses confirmed their participation, **this is excellent and the college should continue its efforts.**

4.3.5 If yes, what has been your experience about the program?

We have listed some of the key responses below.

- ➔ It was very good program, it helps to protect environment and solve the environmental problem
- ➔ I had a great experience with college staff when we were conducting environment awareness program and tree plantation program.
- ➔ Wonderful
- ➔ Good.

4.5 Recommendations for a Sustainable Habitat by Greenvio Solutions

a) Increase the plantations on the premise

There can be provision for more plantations on the premise maybe even a Kitchen garden facility.

b) Plant as a gift

As a kind gesture, the guests visiting the premise can be asked to plant a small plant on the premise itself and they can be even given plants/bouquets from the flowers of the plants on the premise as a gift.

c) Environmental awareness

There can be various artworks on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.

d) Tree adoption scheme

The college can adopt the One Faculty – One tree adoption scheme which is one of its kind practice, this can be very beneficial, especially during the summer season.

e) Signages on the plants mentioning scientific names

The practice of having the names of each plant and tree will provide awareness among the staff and students.

Waste Audit

Background reference image Polina Tankilevitch on pexels

5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided from being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premise clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

5.1 Waste produced

5.1.1 Types and disposal of waste in Premises

The types of waste collected in the premises are as follows, these are separated before processing.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste	TREATED - Sewage treatment plant	Yes	TREATED - Small biogas plant can be proposed in open space
2	Paper waste	Newspaper and other paper	Sold to vendor	Yes	CONTINUE - with the current practice
3	E-waste	Computers - Non-biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste	Organic composting is undertaken	Yes	CONTINUE - with the current practice
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	TREATED - Sewage treatment plant	Yes	CONTINUE - with the current practice
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources – approx. 3 to 5 kg	Organic composting is undertaken	Yes	CONTINUE - with the current practice

Table 4: Summary of the types of waste produced in the premises

5.1.2 Bins summary

There are 25 Dustbins in the premises with volume of 7 litres (small) and 15 litres (medium). The analysis of dustbins is presented below.

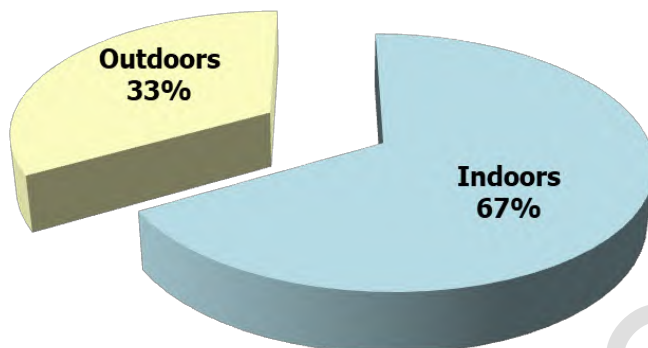


Figure 5: Analysis of dustbins location wise in the premises

The above analysis shows **67% are present in the Indoor areas and 33% in the outdoor areas.**

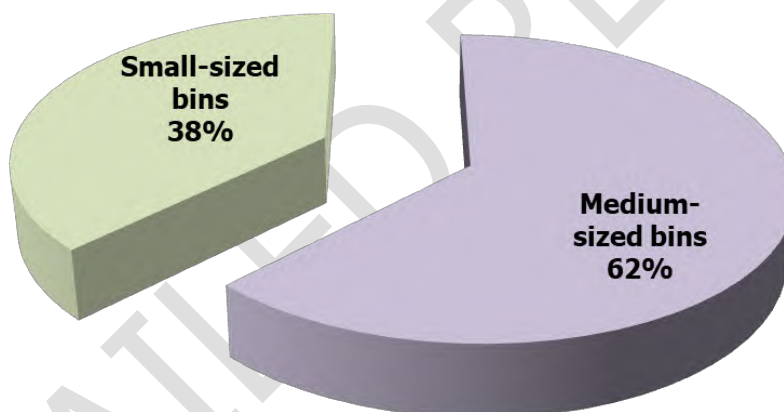


Figure 6: Analysis of dustbins size wise in the premises

Among the dustbins that are present in the premises, **62% are medium-sized bins, whereas 38% are small-sized bins.**

5.2 Waste handling

Quantification wise as per Interview and survey it was found the following type of waste is Solid, Liquid, Hazardous Waste, Dry leaves, E-Waste, Canteen waste, Unused Equipment waste is collected. The waste produced on premises is segregated. It is collected on a weekly basis. The waste is not handed over to the local municipality van. There is a dumping pit in the garden which should not be there.

5.3 Waste management

The College reuses the papers. Ample measures are taken to maintain hygiene. No smell problem or health related issues due to the waste are there. There are adequate numbers of bins present in all parts of building. The waste does not pollute the ground or surface water. There is no problem of air pollution from waste as informed. The wastes from toilets are discharged to main drains through underground covered channels (Safety Tanks) thus avoiding any incident.

5.4 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rating for the views regarding the Waste management practices adopted in College, following is the result received.

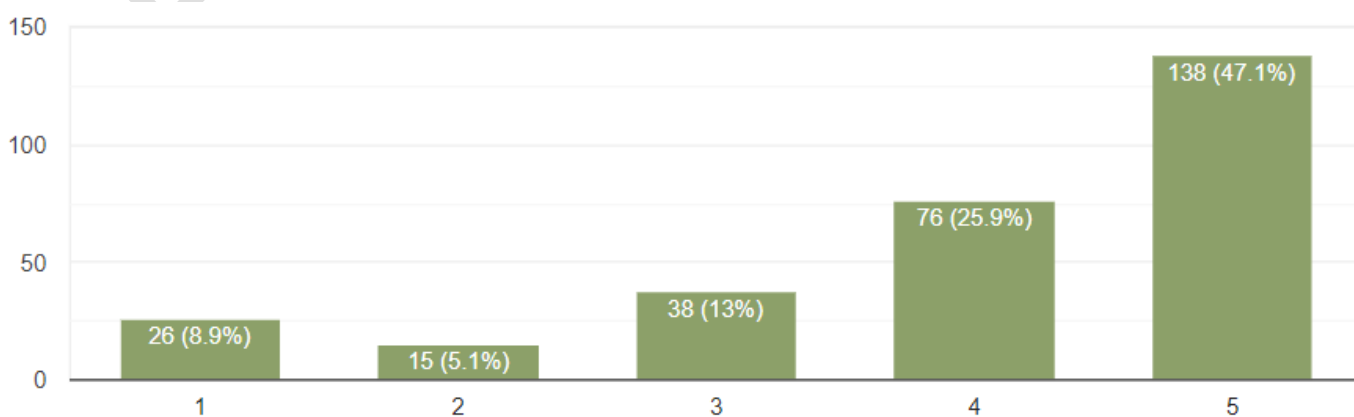


Figure 7: Waste management practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 47%** followed by **26% for rating 4 (Very good)**.

5.5 Recommendations for a Sustainable Habitat

The following practice can be adopted for further up gradation.

a) Twin Dual Litter Dustbin Bins

There should be more number of dual litter dustbins at various locations in areas such as Canteen, open spaces. This would inculcate the awareness of waste segregation among students.

b) Material of the dustbin

The current plastic dustbins should be replaced with eco-friendly material.

DETAILED REPORT

Water Audit



Background reference image Vlad Chetan on pexels

6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the campus met by these sources. The points and effective usage of without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

6.1 Water availability and consumption

6.1.1 Sources of Primary water supply

The main source of water is through Municipality. The College requires water from the Local Municipality for drinking purpose. The total water consumption through the tanks on site, these are available in a quantity of 9 tank with a capacity of 1,000 litres each.

6.1.2 Sources of Secondary water supply

Borewell – There are 8 bore wells available on the site which is used as underground water facility with daily water being pumped for using submersible pumps. On a daily basis water is pumped from per well for usage depending on the need.

6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- **Drinking water** – Consumption of around 850-950 litres of water through Aquaguard like system available in the premise, the taps and water cooler.
- **Toilet blocks**– General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 400-600 litres of water daily
- **Cleaning of the premises** – The entire Institution is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. The toilet areas are cleaned twice on a daily basis.
- **Garden and surrounding open space** – Cleaning, watering the plants requires approximately more than good amount of water, keeping in mind the scale of the open spaces there is supply system connected directly and the plants, trees are hardly watered regularly. The sprinkler system is practiced at present.

6.3 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

- Urinals – 28 Nos.
- Toilets – 34 Nos.
- Wash basins – 60 Nos.
- Taps (Indoors) – 124 Nos.
- Taps (Outdoors) – 34 Nos.

As per the data shared by the College and on site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.

6.4 Site investigation about water management.

The College has an excellent management system which is very appreciable. We have observed the following points.

- There is **no water leakage in the entire premise**; the pipes are well maintained with adequate hygiene.
- **The premise has an efficient water management in terms of operations and maintenance.** The toilets are kept very tidy and are cleaned every day.
- The **waste water does not mix with ground water and gets directed to storm water drains.** There are sufficient numbers of taps in the premise.

6.5 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good

- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rating for the views regarding the Water management practices adopted in College, following is the result received.

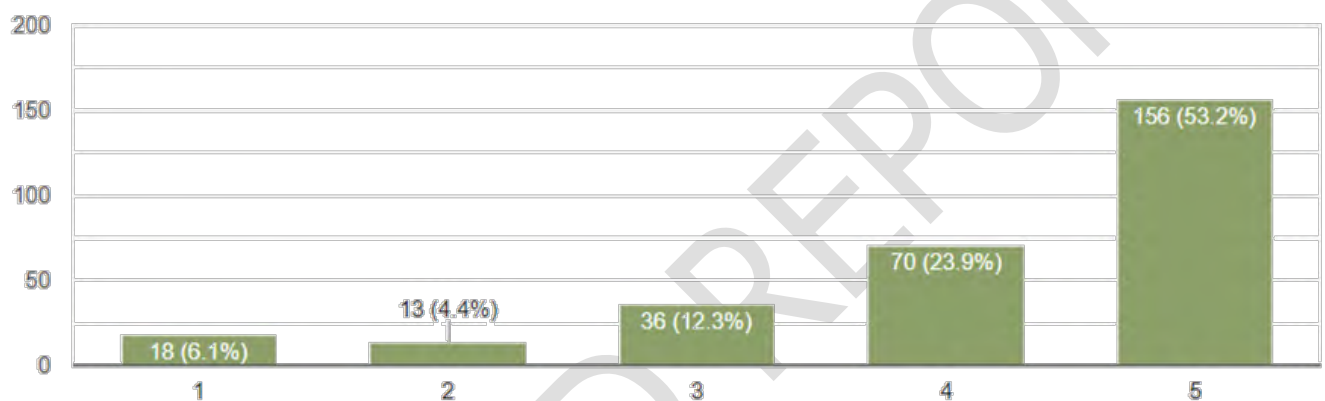


Figure 8: Water management practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 84%** followed by **5% for rating 4 (Very Good)**.

6.6 Recommendations for a Sustainable Habitat

Since there are already multiple steps undertaken only one suggestion has been put forth as follows:

Waterless urinals - There can be provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replace with such a facility of new toilets can be constructed in this manner.

Health & Hygiene Audit



Background reference image Curology on unsplash

7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

7.1 Facilities available

The Institution has the following facilities as part of the premise.

- Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premise

7.2 Smoke Exposure

As per the Site visit the following analysis **has a positive impact on premises.**

- The College has No Smoking on its compound wall as part of the awareness.
- Canteen uses Gas cylinders for cooking, there is no utilisation of fire wood. Thus **there is no smoke from burning of fire wood and any health issues related to the same.**
- The **garbage in premise is not burnt** and there is not air pollution because of it.
- The Institution is a tobacco and smoke free campus which helps in adapting to a Healthy Institution
- There is parking provision inside the campus there is slight issue of dust owing to the same but it is **balanced with the good vegetation in the premise.**

7.3 Hygiene

As per the Site visit the following analysis **has a positive impact on premises.**

- For overall hygiene of the students and staff there are facilities such as Washroom facility on ground floor, hand wash. The hygiene of toilet areas is well

maintained. **The entire premises are cleaned twice on a daily basis. It is very appreciating that there are only few Maintenance staff who strive their best to take care of the entire premise in the most excellent way possible.**

- The staffs keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken. The areas of water tanks in site on ground floor are clean and no mosquito breeding spots are there.
- There are pest controls program practiced with appropriate sanitation facilities and Annual Maintenance Contract for pest control is done once a year by professional Pest control units
- The food premises and equipments are cleaned as per schedule with special care taken to avoid any water stagnation. The food waste and other refuse are removed periodically from food handling areas to avoid accumulation.
- As part of Tree Plantation programme the initiative of **Swachh Bharat Abhiyan of Govt. of India** is undertaken during various occasions.
- There are appropriate storage areas which are well maintained.

7.4 On-site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premise.

7.5 Recommendations for a sustainable habitat

As per site verification for this audit the efforts of the College are highly appreciable as they are very well maintained. However, the college should practice pest control programs with appropriate sanitation facilities through an appropriate agency and install additional Sanitary vending machines and incinerators at appropriate locations.

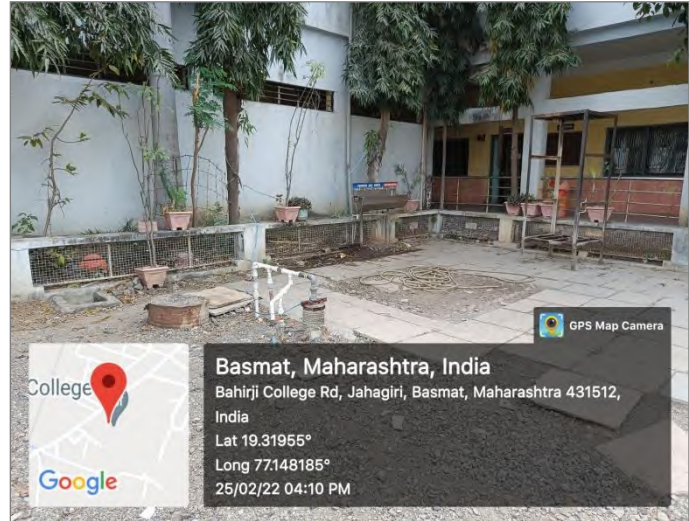
8. Additional Audit inferences

As the College had an offline audit and the report has been prepared based on the inputs provided for immediate action for improvement in this subject. The aspects are listed below.

- **Signing of a MoU for improvement w.r.t. to Green Building aspects of premises** – The same has been suggested before the visit.
- **Articles and Documentation** – The premises has multiple features which add to the beauty of the nature and improve the environment in the premises, it is thus suggested to have an article written every month as guided by the Team.
- **Carbon sequestration study** – This study will have to under taken in two phases; one for the dense forest in the premises and the second phase will be for all the plants in the premises.
- **Scientific name plates as QR codes** – The NSS and UBA team should undertake a project to have QR code name plates on every plant of the premises. It can be undertaken with an expert who has conducted the audit.

On-site investigation and physical verification

Facilities related to water and cleanliness, hygiene practices in the premises



9. Towards a Healthy & Sustainable Institution

9.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

- ➔ **Cutlery in the Canteen** – The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.
- ➔ **Additional fire safety** - Measures such as Hose reel, signages, fire-fighting tank, fire alarm and sprinkler system should be adopted.
- ➔ **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the especially abled students.

9.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity. **Some of the suggestions are listed below:**

- ➔ Water harvesting in institute, online webinars, etc.
- ➔ There is shortage of place so in order to make it green grow more trees
- ➔ Keeping cleanliness and restrictions on student to harm plants.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the premises so many of these points are not mandatory at the moment.

10. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
5. Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

DETAILED REPORT



Environment Audit Certificate

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2020-2021 and 2021-2022 (Analysed for 2 years)** to the Esteemed Institution

Bahirji Smarak Vidyalaya Education Society's

Bahirji Smarak Mahavidyalaya

Mudi Road, Basmathnagar, A/P – Basmathnagar, Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512

As part of the Institution's initiatives for a Healthy & Sustainable College the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Environment Protection and Conservation.

Issued on **Friday, 23 September 2022** valid till **September 2023**


Ar. Nahida Shaikh

Architect, IGBC Accredited Professional, ISO Certified I. A. (IMS)
Assocham GEM Certified Professional (Regn. No. 22/718)

Project Head and Green Building Professional-Consultant

Sustainable Academe

Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environments

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Website: <https://thegreenviosolutions.co.in/>

ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2020 – 2021 AND 2021 - 2022

Sustainability study

AUDIT REPORT

Studied for

Bahirji Smarak Vidyalaya Education Society's

Bahirji Smarak Mahavidyalaya

Mudi Road, Basmathnagar, A/P – Basmathnagar,
Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512

Studied in the capacity of

An accredited & Certified Green Building Professional



Studied by

Greenenvio
Solutions

Valid till **September 2023**

Disclaimer

The Audit Team has prepared this report for the **Bahirji Smarak Vidyalaya Education Society's Bahirji Smarak Mahavidyalaya** located at Mudi Road, Basmathnagar, A/P – Basmathnagar, Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512 based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is an Accredited and Certified Green Building Professional-Architect; ISO Certified I.A. (IMS). Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Bahirji Smarak Vidyalyaya Education Society's Bahirji Smarak Mahavidyalaya, Basmathnagar** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Hon. Shri. Jayprakash Raosaheb Dandegaonkar**, (Ex-State Minister) President; **Hon. Adv. Shri. Munjajirao Narayanrao Jadhav**, Vice-President; **Hon. Shri. Panditrao Ramrao Deshmukh**, Secretary; **Shri. Umakantrao Anantrao Shinde**, Treasurer and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. P. G. Gawali**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. N. N. Lokhande**, Vice-Principal; **Dr. A. S. Kulkarni**, IQAC Coordinator; **Mr. S. K. Nayak**, IQAC Member Secretary; **Dr. V. T. Narwade**, Associate Professor in Botany; **Dr. P. W. Patil**, Associate Professor in Political Science; **Shri. N. K. Akmar**, Sports Director; **Dr. U. U. Raut**, Assistant Professor in History; **Shri. R. R. Barkar**, Assistant Professor in Computer Science and **Shri. M. S. Pawar**, Laboratory Attendant.

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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DETAILED REPORT

1. Introduction

1.1 About the Management

The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

1.2 Mission Statement of the Institution

The College adheres and focuses to the following mission:

- To provide education in the Mofussil area with quality consciousness.
- To generate social responsibility among rural students to become a good human being.
- To promote quality higher education among the rural students.
- To facilitate Social, cultural, educational, ethical and physical development of students.
- To create Social awareness and the spirit of scientific enquiry among the student community.
- To facilitate the spirit of moral & ethical behaviour among the learners.

1.3 About the Institution's Academic arena

The Institution offers the Bachelors and Masters Courses. The College works towards training young men and women to be competent, committed and compassionate, and lead in all walks of life.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Basmathnagar, Hingoli district of Maharashtra** with immense peace and calmness in the surroundings. There

is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture.

1.5 Assessment of the College

1.5.1 Affiliations

The College has all its courses approved and affiliated to **S.R.T.M. University**, established in 1994 as a state public university located at Latur Road Nanded in Maharashtra state.

1.5.2 Certification

- ➔ **AISHE** – The College has the AISHE Code C- C-7620.
- ➔ **ISO** – Certificate issue date 26 September 2020 and valid up to 25 September 2023.
- ➔ **NIRF** – The College has been regularly participating in NIRF Rankings since 2016.

1.5.3 Recognition

The College is recognised by **University Grant Commission (UGC)** under section 2 (f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi.

1.5.4 Accreditation

Cycle	First	Second
CGPA	-	2.64
Grade	C++	B+
Year	2005	2016

Table 1: NAAC Accreditation details of the Institute

The College is due to enter its Third cycle of NAAC.

1.6 Awards of the College

The College has received the '**Best College Award**' By Swami Ramanand Teerth Marathwada University, Nanded (Parent University) for academic year 2020-2021.

2. Institution overview

2.1 Populace analysis for Academic year 2021-2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **840 Boys and 845 Girl students**, thus there were **a total of 1,695 students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	08	00	08
Teaching staff	29	06	35
Non-Teaching staff	22	01	23
Total Staff Members	59	07	66

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the premises had a total of **66** Staff Members.

2.2 Populace analysis for Academic year 2020-2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **729 Boys and 826 Girl students**, thus there were **a total of 1,555 students** on the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	11	00	11
Teaching staff	30	06	36
Non-Teaching staff	22	01	23
Total Staff Members	63	07	70

Table 3: Staff data of the Institution for 2020-2021

The staff data shows the premises had a total of **70** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 17 Acres** and the **total Built-up area of College is 11,011.52 sq, or 1,18,483.95 sq. ft.** for a **total of 1,761 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1971. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institution is open from Monday to Saturday from 08:00 hours to 18:00 hours.

3. Green Building Study Audit

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 17 January 2022 – Discussion with the College
- 14 February 2022 – Allotment and Initiation by the College
- 14 February 2022 – Induction meeting
- 24 February 2022 – Survey of the Student and staff submitted
- September 2022 – Data submitted by the College
- 23 September 2022 – Submission of the report

4. Site Study

The following listed are some of the positive site elements which are beneficial to the College in terms of tangible and intangible benefits.

- **Location** - The Bahirji Smarak Vidyalaya Education Society's Bahirji Smarak Mahavidyalaya is located at Mudi Road, Basmathnagar, A/P – Basmathnagar, Taluka – Basmathnagar, District – Hingoli (Maharashtra State) 431512 and falls under the Basmath Municipal Council.
- **Neighbourhood context** - The premises is surrounding by open spaces and Residential, Commercial and Educational areas on the immediate surroundings of the site.
- **Natural physical features** – The premises includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major difference in the land levels (contours).
- **Manmade features** – The premises is situated in a semi-urban area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation** – There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff are parked.
- **Climate** – The hottest month of the year in Basmat is May, with an average high of 107°F and low of 81°F. The cool season lasts for 6.7 months, from July 5 to January 27, with an average daily high temperature below 90°F. The coldest month of the year in Basmat is December, with an average low of 57°F and high of 86°F.

(Source: weatherspark.com)

Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels

5. Ecological (Environmental) Audit

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premises. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

As part of our study we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The College has huge open space used by all. The students use it as a leisure place for study and College ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premises.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premises and the open/vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. The design on the entire is such that the landscape and softscape spaces are very well oriented and located thus being extremely useful to Institutions in the site. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are adequate numbers of Maintenance staff allotted for the upgrading the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the College has taken special provisions for the same. The spaces are watered daily in summer. **The efforts to maintain the existing space are commendable.**

5.2 Flora and fauna audit

5.2.1 Flora Audit

A flora survey was carried out to identify the total numbers of plants and trees. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premises in the last few years as follows with detail description of each.

S. No.	Type	Nos.
1	Majority plants are shrubs & Tree	251
2	Rarely herbs teak (Sagwan)	1564

Table 4: Details of the Flora in the premises

At present there are 1,815 plantations comprising of plants, trees, shrubs. All of these are planted on various occasions while some have grown naturally. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

5.2.2 Fauna Audit

It is a beautiful site to have the birds chirping around the College premises. It highlights the ecological co-existence concept in the most beautiful way.

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the College is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is extremely low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The College has an adequate open space covered with huge trees prevailing naturally in the premises which act as a noise barrier; in addition the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution. There are parking provisions provided in the premises which causes minimum noise as they are situated near the entrance which is a bit away from the College building. There

are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low that is a good approach.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting** – Owing to close proximity to public transport the access is very feasible and walk able.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Vehicles details** – The provision provided by College includes vehicle parking is allowed at present as follows.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	2-3	Staff
2	Bikes	25-30	Staff and Students
3	Cycles	40-50	Students

Table 5: Details of the Parking in the premises

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas** – The top floor has a sloping roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staffs along with Management have taken ample measures to maintain the same. **There was no weathering of roof observed.** The current practices are well maintained.
- **Exposed non-roof hardscape areas** - There are pathway on all sides of the premises. These include some natural and potted plantations along the pathways. Huge garden spaces are available in the premises.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

The College compound lights are not upward looking thus, these do not cause light pollution.

5.5 Universally accessible premises

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India. **There are Ramps, Handrails along staircase and low height risers in the Staircases as part of universal campus initiatives.** The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated.

5.6 Survey Results

An online survey was conducted to analyse the views about the premises, following are some of the reviews.

5.6.1 Participation

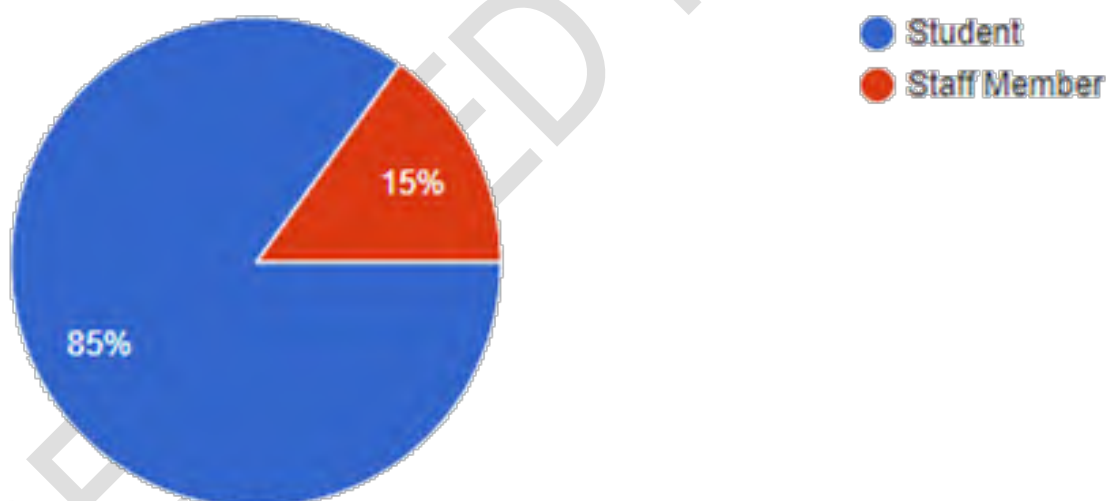


Figure 1: Participation analysis in the survey

A total of **293 responses** were received out of which 85% were students.

5.6.2 What according to you are the positive steps taken by the College towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- ➔ Giving water to plant daily.
- ➔ Planting trees and minimizing deforestation.

- All buildings of institute are cleaned and maintained regularly basis. The College campus have garden and tree planting is done during each events as sign of gesture towards Mother Nature.
- Taking seminars about Importance of planting plants
- We have green garden and planting different plants & we teaching students awareness of environment.

5.8 Positive site features as per our study

a) Avoid using plastic in premises

There are provisions for ban on the use of plastic bags or products in the Premises.

b) OPAC system

The system in the library is beneficial for the students.

c) User friendly movability in premises

There are provisions for Kerb Ramp near the main entrance of the Building premises, also low height hand rail for ease of access.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting the College premise.

b) Nutrition pits

Certain pits can be demarcated as 'Nutrition pits' where the organic food from the kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition-rich soil

Universally accessible premises

a) Universal Toilet

There should be a minimum of 1 toilet for the specially-abled people as per guidelines prescribed by the National Building Code 2016 with size being a minimum of more than 1.5m x 1.5m

b) User-friendly movability on-premises

There should be the provision of a Kerb Ramp near the main entrance of the Building premises, also a low height handrail for ease of access.

Pollution Control

a) Promote the use of Eco-friendly vehicles

There can be provision for battery-operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open spaces along with battery charge points, this would inspire students to change their mode of transportation and adopt sustainable practices.

b) Bicycles as a gift

As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

c) Paperless technologies for offices

The college can go technology-friendly and go paperless in the functioning of the Premise to a certain extent maybe not fully.

d) Avoid paper wastage through books

The College can collect all old semester notebooks; these can either be converted to reusable paper on the premises through a workshop or using a shredder machine or handed over to a vendor for making fresh paper. Additionally, the Students can be motivated to undertake similar practices on an individual note.

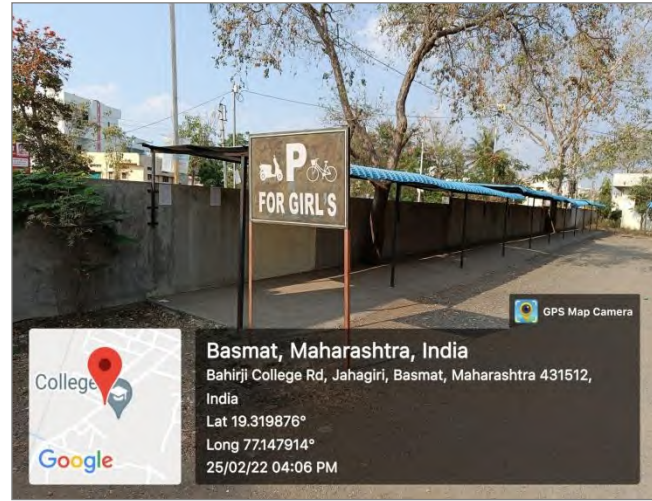
e) Plant more carbon dioxide absorbing plants

Specific plantations such as follow should be planted as they will help in Carbon neutralisation.

- Pine – It is known for its ability to sequester carbon.
(<https://www.single.earth/blog/which-trees-absorb-the-most-carbon#:~:text=Pine%20trees%20as%20carbon%20sinks,their%20ability%20to%20sequester%20carbon.&text=These%20trees%20are%20found%20in,also%20make%20good%20landscape%20plants>)
- Neem – It helps to reduce greenhouse gases through photosynthesis absorbing large quantities of CO₂ and producing oxygen.
(<https://neemfoundation.org/greening-india-with-neem/#:~:text=The%20planting%20of%20Neem%20trees,of%20CO2%20and%20producing%20oxygen>)
- Peepal – It can uptake CO₂ during the night as well because of its ability to perform a type of photosynthesis called Crassulacean Acid Metabolism (CAM)
([https://nurserylive.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2,-.Peepal,Crassulacean%20Acid%20Metabolism%20\(CAM\)](https://nurserylive.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2,-.Peepal,Crassulacean%20Acid%20Metabolism%20(CAM)))
- Bamboo - It can absorb as much as 12 tonnes of carbon dioxide per hectare per year, giving the plant a potentially crucial role in stabilising our planet's atmosphere.
(<https://www.theguardian.com/environment/2003/mar/20/research.science#:~:text=Research%20in%20Japan%20and%20elsewhere,in%20stabilising%20our%20planet's%20atmosphere>) and <https://www.nelda.org.in/15-indian-trees-that-produce-the-most-oxygen>
- Teak – It has the highest capacity for carbon sequestration among trees in India. This is the finding of a study conducted by the Gujarat Ecological Education and Research (GEER).
(<https://timesofindia.indiatimes.com/city/ahmedabad/teak-absorbs-max-co2-from-air-helps-check-global-warming/articleshow/51721842.cms>)

On-site investigation and physical verification

The ecologically friendly ambience with facilities such as open spaces, lifts and gardens



6. Towards a Healthy & Sustainable Institution

6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

- ➔ **Cutlery in the Canteen** – The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.
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5. Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
6. Climate data <https://weatherspark.com/y/109070/Average-Weather-in-Basmat-India-Year-Round#:~:text=The%20hottest%20month%20of%20the,high%20of%2086%C2%B0F.>

